

WHAT IS CLAIMED IS

5

1. A semiconductor device, comprising:
a compound semiconductor substrate having a
resistivity less than 1.0×10^8 Ohm-cm at least at
surface thereof;

10

a buffer layer formed on the compound
semiconductor substrate and having a super lattice
structure; and

15

an active layer formed on the buffer layer
and having an active element formed therein.

20

2. A semiconductor device as claimed in
claim 1, wherein the compound semiconductor substrate
has a resistivity less than 0.6×10^8 Ohm-cm.

25

3. A semiconductor device as claimed in
claim 1, wherein the active layer is formed at a
position within $5.0 \mu\text{m}$ from the surface of the
compound semiconductor substrate.

30

4. A semiconductor device as claimed in
claim 1, further comprising an electrode layer formed
on another surface of the compound semiconductor
substrate.

SUB
B1

204070-445E007

SUB
B.7

5. A semiconductor device as claimed in claim 4, wherein the electrode layer is not electrically connected to the semiconductor device.

10

6. A semiconductor device as claimed in claim 4, wherein the electrode layer is connected to one power supply potential of the semiconductor device.

15

7. A semiconductor device as claimed in claim 1, further comprising:

20

a source electrode and a drain electrode formed on the active layer, separated from each other so as to establish a channel region, and

a gate electrode formed above the channel region.

25

SUB
A1

8. A semiconductor device as claimed in claim 7, wherein the active layer has 2-Dimensional Electron Gasses.

35

SUB
B3

9. A semiconductor device as claimed in claim 1, wherein the active layer comprises:

204010-010402

SUB
B3

a collector layer of a first conducting type;

a base layer of a second conducting type formed on the collector layer;

5 an emitter layer of the first conducting type formed on the base layer.

10

10. A semiconductor device as claimed in claim 1, wherein the compound semiconductor substrate has a resistivity more than 1.0×10^8 Ohm-cm in total.

15

SUB
A2

20 11. A semiconductor device as claimed in claim 1, wherein the compound semiconductor substrate comprising a compound semiconductor support substrate having a resistivity more than 1.0×10^8 Ohm-cm and a compound semiconductor having a resistivity less than 1.0×10^8 Ohm-cm.

204010" 4445E007